CLASSIFICATION C-O-N-F-I-D-E-N-T-I-A-L CENTRAL INTELLIGENCE AGENCY REPORT INFORMATION REPORT CD NO. COUNTRY USSR (Black Sea) DATE DISTR. 29 September 1955 3 SUBJECT Atomic Research Institute at Sinop NO. OF PAGES PLACE NO. OF ENCLS. ACQUIRED REFERENCES: DATE OF INFO. 25X1 25X1 THIS IS UNEVALUATED INFORMATION forwarded as received. Attached is a copy Comments: 1. The Dr. Lehmann referred to is probably Hans Emil Lehmann. Other reports have stated that the bonding agent mentioned in 25X1 paragraph 2 is gum tragacanth. 25X1

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## 25X1

## Manufacture of crucibles.

- 1. Thorium oxide (ThO<sub>2</sub>), a greyish-white powder was mixed with 96 percent alcohol and filled by hand into cylinders 25 mm long and 10 mm in diameter. In these molds the mass was air-dried for 24 hours and subsequently charged into a heavy-duty furnace which, over a period of 6 hours, was gradually heated to 1,000 degrees centigrade. This temperature was maintained for 60 minutes, then the heating was switched off and the molds remained in the furnace for another 24 hours for cooling. The mass was then charged for 3 hours into a high-vacuum sintering furnace brought to a temperature of 2,000 degrees centigrade within a period of 30 minutes.
- 2. After the sintering process, the mass was left for cooling in the high-vacuum furnace for an undetermined period of time. It was then mixed with a bonding agent called Aga-Aga (some type of wood resin) and subsequently ground in a steel ball mill for 48 hours. A quantity of 2 kg of Aga-Aga was said to be added to each filling of the mill. The proportion of the mixture is unknown. The resulting mass was pressed into crucibles by a 5-ton press.

## Manufacture of insulting tubes.

3. Beryllium oxide was pressed by hand into tubes 200 mm, 300 mm and 500 mm long. After air-drying, the tub s were broken into 50-mm long pieces which were consecutively annealed, air-cooled and sintered. After renewed cooling, the tubes were broken down to 3-5 mm lengths. Their diameter was also 3-5 mm. The pieces, the so-called "insulating pearls" were strung on tungsten wire and were used for the insulating CLASSIFICATION CONFIDENTIAL

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of electrically heated resistors. In earlier experiments, thorium oxide had been used for the manufacture of these "insulating pearls" but it was soon replaced by beryllium oxide, and eventually the use of thorium oxide was resumed. Initial experiments with aluminum ended in failure since aluminum did not stand the severe temperatures.

4. While rejects of the tube manufacture were recovered, discarded "insulating pearls" were thrown out to the refuse dump. They were not destroyed. "Insulating pearls" became unserviceable as soon as they showed signs of reaction. The quantity of insulating pearls produced was determined by the institute's current requirements.

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